APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/779,521	02/09/2001	Mikio Koga	010112	5354

			EXAMINER
38834	7590	09/23/2004	THOMPSON, JAMES A

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ART UNIT	PAPER NUMBER
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DATE MAILED: 09/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☒ Claim(s) *4-6 and 9-10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>09 February 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Priority

1.   Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

2.   Claims 4 and 9 are objected to because of the following informalities:

Claims 4 and 9 are improperly formatted. On line 2 of each claim, "pattern collation means includes;" should be changed to "pattern collation means includes:".

Appropriate correction is required.

3.   Claims 5 and 10 are objected to because of the following informalities:

Claims 5 and 10 are improperly formatted. On line 2 of each claim, "starts collation with;" should be changed to "starts collation with:".

Appropriate correction is required.

4.   Claim 6 is objected to because of the following informalities:

Claim 6 is improperly formatted. On line 1, "image forming apparatus comprising;" should be changed to "image forming apparatus comprising:".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

5.   Claims 1-3 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bunce (US Patent 5,237,646) in view of Fukushima (US Patent 5,282,059).

Regarding claim 1: Bunce discloses an image processing apparatus (figure 2 of Bunce) comprising a window array conversion means (figure 2(52(portion)) of Bunce) for converting a data array of an output from a window (figure 2(60) of Bunce) extracted from image data (column 3, lines 45-48 of Bunce). A processor (figure 2(52) of Bunce) controls the overall operation of the system (column 3, lines 28-29 of Bunce). Said window array conversion means corresponds to the portion of said processor that performs the functions of said window array conversion means.

Said apparatus further comprises a pattern collation means (figure 2(70) of Bunce) for collating array conversion data obtained through said window array conversion means (column 4, lines 28-34 of Bunce) with a group of templates (column 4, lines 22-26 of Bunce) each constituted by a single-directional reference pattern (column 4, lines 26-28 of Bunce). Since pre-rotation has to be performed to determine if said window matches a template (column 4, lines 22-26 of Bunce), thus reducing the number of templates that need to be stored (column 4, lines 26-28 of Bunce), said templates are therefore each constituted by a single-directional reference pattern. Only one direction of the reference pattern is needed since the other rotated directions are matched by rotating the window (column 4, lines 22-26 of Bunce).

Said apparatus further comprises a pattern collation control means (figure 2(74) of Bunce) for switching a plurality (figure 3(65) of Bunce) of said array conversion data

(column 5, lines 33-38 of Bunce) obtained from an output data of the collation window

through said window array conversion means (column 5, lines 30-33 of Bunce) to

collate said single-directional reference pattern group with said array conversion data

(column 4, lines 54-61 of Bunce).

Bunce does not disclose expressly that said extracted window is an MxN

window; and that said switching occurs on a time-division basis.

Fukushima discloses processing image data by extracting an MxN window

(figure 7(100) and column 10, lines 20-23 of Fukushima) for processing (column 10,

lines 23-25 of Fukushima).

Fukushima further discloses performing switching of image data processing on a

time-division basis (column 13, lines 61-65 of Fukushima). Outputting the processed

data is performed by switching between the encoders on a time division basis (column

13, lines 61-65 of Fukushima).

Bunce and Fukushima are combinable because they are from the same field of

endeavor, namely digital image data processing. At the time of the invention, it would

have been obvious to a person of ordinary skill in the art to specifically use an MxN

window. The motivation for doing so would have been to be able to perform image

data enhancement based on the features of a particular area (column 10, lines 48-53

of Fukushima). Further, at the time of the invention, it would have been obvious to a

person of ordinary skill in the art to process said array conversion data on a time-

division basis. The motivation for doing so would have been to improve the rate at

which said array conversion data can be output from said pattern collation control

means. An increase in data transmission when there are several output units that can be switched between is a well-known benefit of time-division switching. Therefore, it would have been obvious to combine Fukushima with Bunce to obtain the invention as specified in claim 1.

Regarding claim 2: Bunce discloses that said pattern collation control means switches to select said array conversion means according to logic combination of mark dots and space dots (figure 3(65) and column 5, lines 30-38 of Bunce) among the current dot of interest and its right and left neighboring dots in said output data of the window (figure 4(72) and column 4, lines 39-43 of Bunce). Based on a comparison of the input window and the templates (column 5, lines 30-33 of Bunce), switching occurs between the difference rotated configurations of the enhanced pixel representation (column 5, lines 33-38 of Bunce). Said comparison between said input window and said templates is a logic combination of mark dots and space dots, since it is the mark dots and space dots that are being compared to determine if there is a template match (column 4, lines 39-43 of Bunce). Since a 3x3 window is used for said comparison (figure 4(72) and column 4, lines 39-43 of Bunce), then said logic combination of mark dots and space dots occurs among the current dot of interest (figure 2(62) and column 3, lines 54-57 of Bunce) and its right and left neighboring dots (figure 4(72(bit positions to the left and right of the center bit position)) of Bunce).

Regarding claim 6: Bunce discloses an image processing apparatus (figure 2 of Bunce) comprising an image processing unit (figure 2(all but 53) of Bunce) for extracting a window pattern (figure 2(60) of Bunce) from a bitmap data expanded from

an image data (column 3, lines 45-48 of Bunce), collating said window pattern with a group of predetermined collation patterns (column 4, lines 28-34 of Bunce), and extracting contour characteristics of said image to carry out dot correction (column 5, lines 23-29 of Bunce). The extraction of contour characteristics is performed by comparing the window of image data with a set of predetermined templates (column 5, lines 26-29 of Bunce). The image processing unit corresponds to the elements shown in figure 2 of Bunce, except for the laser print engine (figure 2(53) of Bunce), since said laser print engine is used to output the resultant data.

Said apparatus further comprises an image forming unit (figure 2(53) of Bunce) for forming an image corresponding to a bitmap data of the dot-corrected image (column 4, lines 30-34 of Bunce).

Said image processing unit further comprises a window array conversion means (figure 2(52(portion)) of Bunce) for converting a data array output from the window (figure 2(60) of Bunce) extracted from said image data (column 3, lines 45-48 of Bunce). A processor (figure 2(52) of Bunce) controls the overall operation of the system (column 3, lines 28-29 of Bunce). Said window array conversion means corresponds to the portion of said processor that performs the functions of said window array conversion means.

Said image processing unit further comprises a pattern collation means (figure 2(70) of Bunce) for collating array conversion data obtained from said window array conversion means (column 4, lines 28-34 of Bunce) with a group of templates (column 4, lines 22-26 of Bunce) each constituted by a single-directional reference pattern

(column 4, lines 26-28 of Bunce). Since pre-rotation has to be performed to determine

if said window matches a template (column 4, lines 22-26 of Bunce), thus reducing the

number of templates that need to be stored (column 4, lines 26-28 of Bunce), said

templates are therefore each constituted by a single-directional reference pattern.

Only one direction of the reference pattern is needed since the other rotated directions

are matched by rotating the window (column 4, lines 22-26 of Bunce).

Said image processing unit further comprises a pattern collation control means

(figure 2(74) of Bunce) for switching a plurality (figure 3(65) of Bunce) of said array

conversion data (column 5, lines 33-38 of Bunce) obtained from an output data of the

collation window through said window array conversion means (column 5, lines 30-33

of Bunce) to collate said single-directional reference pattern group with said array

conversion data (column 4, lines 54-61 of Bunce) for a plurality of times (column 3,

lines 52-57 of Bunce).

Bunce does not disclose expressly that said extracted window is an MxN

window; and that said switching occurs on a time-division basis.

Fukushima discloses processing image data by extracting an MxN window

(figure 7(100) and column 10, lines 20-23 of Fukushima) for processing (column 10,

lines 23-25 of Fukushima).

Fukushima further discloses performing switching of image data processing on a

time-division basis (column 13, lines 61-65 of Fukushima). Outputting the processed

data is performed by switching between the encoders on a time division basis (column

13, lines 61-65 of Fukushima).

Bunce and Fukushima are combinable because they are from the same field of

endeavor, namely digital image data processing. At the time of the invention, it would

have been obvious to a person of ordinary skill in the art to specifically use an MxN

window. The motivation for doing so would have been to be able to perform image

data enhancement based on the features of a particular area (column 10, lines 48-53

of Fukushima). Further, at the time of the invention, it would have been obvious to a

person of ordinary skill in the art to process said array conversion data on a time-

division basis. The motivation for doing so would have been to improve the rate at

which said array conversion data can be output from said pattern collation control

means. An increase in data transmission when there are several output units that can

be switched between is a well-known benefit of time-division switching. Therefore, it

would have been obvious to combine Fukushima with Bunce to obtain the invention as

specified in claim 6.

Regarding claim 7: Bunce discloses that said pattern collation control means

switches said array conversion means according to logic combination of mark dots and

space dots (figure 3(65) and column 5, lines 30-38 of Bunce) among the current dot of

interest and its right and left neighboring dots (figure 4(72) and column 4, lines 39-43 of

Bunce). Based on a comparison of the input window and the templates (column 5,

lines 30-33 of Bunce), switching occurs between the difference rotated configurations

of the enhanced pixel representation (column 5, lines 33-38 of Bunce). Said

comparison between said input window and said templates is a logic combination of

mark dots and space dots, since it is the mark dots and space dots that are being

compared to determine if there is a template match (column 4, lines 39-43 of Bunce).

Since a 3x3 window is used for said comparison (figure 4(72) and column 4, lines 39-

43 of Bunce), then said logic combination of mark dots and space dots occurs among

the current dot of interest (figure 2(62) and column 3, lines 54-57 of Bunce) and its right

and left neighboring dots (figure 4(72(bit positions to the left and right of the center bit

position)) of Bunce).

Regarding claims 3 and 8: Bunce discloses that said pattern collation control

means extracts, as the current dot of interest, a center dot from a dot array in a window

obtained from said image data (column 3, lines 54-57 of Bunce), together with the right

and left dots both neighboring the current dot of interest (figure 4(72) and column 4,

lines 35-39 of Bunce) along with a direction of extraction which is a direction of image

data collation (figure 4 and column 4, lines 39-47 of Bunce). Since a 3x3 window is

used (figure 4(72) and column 4, lines 35-39 of Bunce), the right and left dots (figure 4

(72(bit positions to the left and right of the center bit position)) of Bunce) neighboring

the current dot of interest are extracted along with said current dot. The angle of

rotation, and thus the direction of extraction of image data collation, is also extracted

(figure 4 and column 4, lines 39-47 of Bunce) along with the current dot of interest and

said right and left dots.

Bunce does not disclose expressly that said dot array is an MxN dot array.

Fukushima discloses processing image data by extracting an MxN window

(figure 7(100) and column 10, lines 20-23 of Fukushima) for processing (column 10,

lines 23-25 of Fukushima).

Bunce and Fukushima are combinable because they are from the same field of endeavor, namely digital image data processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to specifically use an MxN window. The motivation for doing so would have been to be able to perform image data enhancement based on the features of a particular area (column 10, lines 48-53 of Fukushima). Therefore, it would have been obvious to combine Fukushima with Bunce to obtain the invention as specified in claims 3 and 8.

Allowable Subject Matter

6.   Claims 4-5 and 9-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7.   The following is a statement of reasons for the indication of allowable subject matter:

The first template group, second template group, and third template group, each consisting of the various associated elements specifically recited in claim 4, were not found in a search of the prior art. The templates found in the closest prior art were generally two-dimensional window-based templates, such as disclosed in Bunce (US Patent 5,237,646).

Claim 9 contains the same limitations as claim 4 and therefore also contains allowable subject matter.

Claims 5 and 10 are dependent upon claims 4 and 9, respectively. Claims 5 and 10 therefore also contain allowable subject matter.

Conclusion

8.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Loce et al., US Patent 6,438,273 B1, 20 August 2002, filed 23 December 1998.

Loce et al., US Patent 6,775,410 B1, 10 August 2004, filed 25 May 2000.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A Thompson whose telephone number is 703-305-6329. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K Moore can be reached on 703-308-7452. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James A. Thompson
Examiner
Art Unit 2624

JAT
15 September 2004

THOMAS D.
TOMMY LEE
PRIMARY EXAMINER